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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Terumasa Ide

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McDermott Will & Emery
600 13th Street NW
Washington, DC 20005-3096

EXAMINER

COMLEY, ALEXANDER BRYANT

ART UNIT

PAPER NUMBER

3746

MAIL DATE

DELIVERY MODE

08/03/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/509,748	Applicant(s) IDE ET AL.	
	Examiner ALEXANDER B. COMLEY	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 6-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 6-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 2nd, 2010 has been entered.

Status of the Claims

2. Examiner acknowledges receipt of Applicant's amendments and arguments filed with the Office on May 28th, 2010 in response to Final Office Action mailed on February 2nd, 2010. Per Applicant's response, Claim 1 has been amended. Claim 5 has been cancelled, while Claim 11 has been newly-added. Claims 2-4 remain cancelled due to a prior amendment. All other claims have been left in their previously presented form. Consequently, Claims 1 and 6-11 now remain for prosecution in the instant application. The Examiner has carefully considered each of Applicant's amendments and/or arguments, and they shall be addressed below.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims 1 and 6-7** are rejected under 35 U.S.C. 103(a) as being unpatentable

over United States Patent No. 6,402,484 to Svendsen et al. in view of United States

Patent Application Publication No. 2004/0052653 to Kubota et al.

Fig. 2

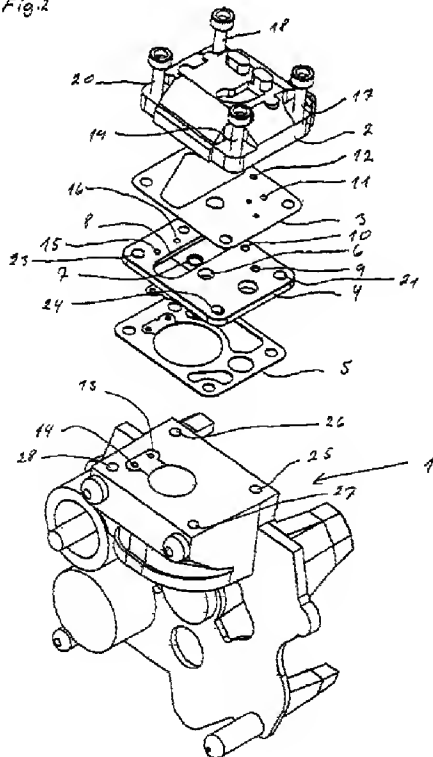
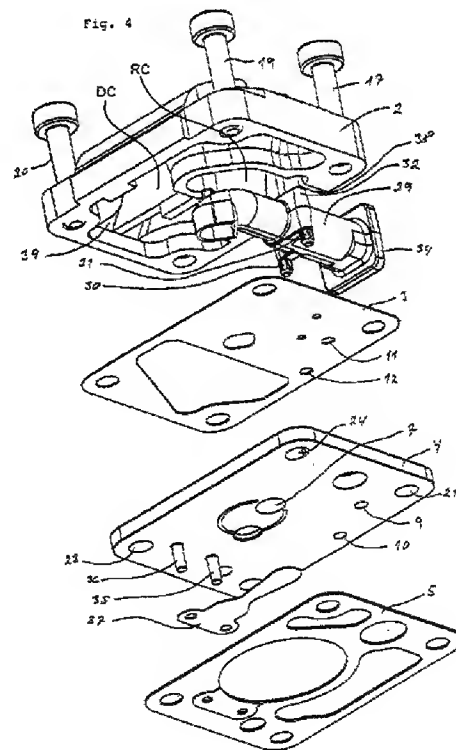


Fig. 4



In regards to Independent **Claim 1**, and with particular reference to Figures 2 and 4 shown immediately above, Svendsen et al. (Svendsen) discloses:

(1) A hermetic type compressor (Fig. 1) comprising: a hermetic container which accommodates stored oil (not shown; see Col. 1, Lines 18-27), an electric motor unit (not shown; see Col. 1, Lines 18-27), and a compressing unit (not shown; see Col. 1, Lines 18-27), wherein the compressing unit comprises: a cylinder (1) for storing a reciprocally moving piston (not shown; see Col. 1, Lines 18-27), a plate (4) having a suction hole (6) and a discharge hole (7) disposed at an end of the cylinder, a suction muffler (not shown; see abstract) having a connection pipe (29) communicated to the suction hole in the plate, and a cylinder head (2) disposed at the side of the plate opposite to the cylinder, and the cylinder head is formed with a discharge chamber (DC) communicating with the discharge hole and a resonance chamber (RC) which communicates with an open side of the connection pipe; a flange (32, 33) which has a generally U-shaped protruding portion having a rounded end portion and has upper and lower surfaces, and an outer surface disposed so as to surround an outer periphery of the connection pipe (see flange 32 surrounds outer pipe diameter 29 in Figure 4); the cylinder head is provided with a generally U-shaped groove (38) having a rounded portion to which the rounded end portion of the generally U-shaped protruding portion of the flange is fitted at a position corresponding to the flange; and by fitting the flange into the groove, having an effective sealing width added to the upper and

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lower surfaces and the outer surface, thereby forming a seal portion so as to prevent a leakage of pressure pulsation in the resonance chamber to the outside.

As shown in Figures 2 and 4 above, Svendsen discloses a refrigerant compressor that utilizes a cylinder block 1, valve plate 4, cylinder head 2, and suction muffler (not shown) with attached connection pipe 29. Svendsen's compressor is designed with sealing and alignment in mind, such that when the compressor is assembled, all parts are tightly connected and held stationary with respect to one another (See Abstract). Svendsen begins by described the type of compressor utilized for the device (i.e. a reciprocating compressor with electric motor) by stating "The invention particularly concerns a hermetically enclosed refrigeration compressor, comprising an electric motor, which, by means of a rotating shaft and a crank disc connection, drives at least one piston to a reciprocating movement in a cylinder block, the cylinder block being closed by a valve plate, which forms the basis of suction and pressure valves, the valve plate being, on the side opposite the piston, covered by a cover, which has an opening for the adoption of a pipe, which is connected with a suction muffler." (Col. 1, Lines 18-27). See Column 1, Lines 29-65 for more specific recitations regarding the use, structure, and function of the suction muffler in Svendsen's compressor. Svendsen specifically describes the primary components that make up the compressor and suction muffler by stating "FIG. 2 shows a dismounted compressor top part with a cylinder block 1, on which a cover 2, a first sealing 3, a valve plate 4 and a second sealing 5 are mounted. The valve plate 4 has a suction opening 6

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and a discharge opening 7, the suction opening 6 being covered under the valve plate by a suction valve 37 (FIG. 4), the discharge opening being closed by a discharge valve (not shown), which can be mounted in an indentation 8." (Col. 5, Lines 26-33). A discharge chamber (DC) and resonance chamber (RC) can be seen labeled by the Examiner in Figure 4 above. Most importantly, however, is the structure of Svendsen's suction muffler connection pipe 29 and alignment shoulders (i.e. flanges) 32 and 33. With reference to Figures 3 and 4, Svendsen states "FIG. 3 shows a cover 2, which cooperates with a suction muffler pipe 29, which is connected with a suction muffler, not shown. The pipe 29 has two projections 30, 31, which cooperate with the holes 11, 12 in the first sealing 3. The projections 30, 31 also cooperate with the holes 9, 10 in the valve plate 4. Additionally, the pipe 29 is provided with projections in the shape of shoulders 32, 33, which cooperate with corresponding recesses 38 in the cover 2 (FIG. 4)." (Col. 5, Lines 47-55) As shown best in Figure 4, the shoulders (32, 33) are formed as generally u-shaped protruding flange members with an upper surface, a lower surface, and rounded outer edges designed to be fitted to corresponding rounded grooves 38 disposed in the cylinder head 2. It is clear from Figure 4 that the members (32, 33) are rounded at their outer edges (i.e. at the location of pins 30, 31), and these rounded portions tightly fit within the semi-circular grooved recesses 38. Svendsen discloses the importance of these alignment structures in order to maintain the seal between adjacent components by stating "With a method as mentioned in the introduction, this task is solved in that the cover controls and secures the placement of the pipe, the pipe controlling and securing the placement of the valve plate and a

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sealing between the cover and the valve plate, and the valve plate, by means of at least one guiding element controlling and securing the placement of the valve plate in relation to the cylinder block, and at least one additional guiding element between cover, valve plate and cylinder block controlling and securing the mutual placement of cylinder block and valve plate.” (Col. 3, Lines 37-46) Svendsen goes on to say “The suction muffler or its pipe can have projections, which, by means of holes in both sealing and valve plate, control and secure the mutual placement of the suction muffler and its pipe in relation to the sealing and to the valve plate. Thus, the suction muffler is with a high degree of security retained in the correct position, so that an undesired flow resistance and undesired heat conduction to the suction gas is avoided.” (Col. 3, Lines 13-19) Hence, it is clear that Svendsen's device provides an improved effective sealing width to the suction muffler connection pipe 29, thereby preventing leakage of pressure pulsation to the outside. However, although Svendsen discloses the vast majority of Applicant's claimed inventive elements, it fails to substantially and specifically disclose the use of an oil hole disposed at the bottom of the suction muffler.

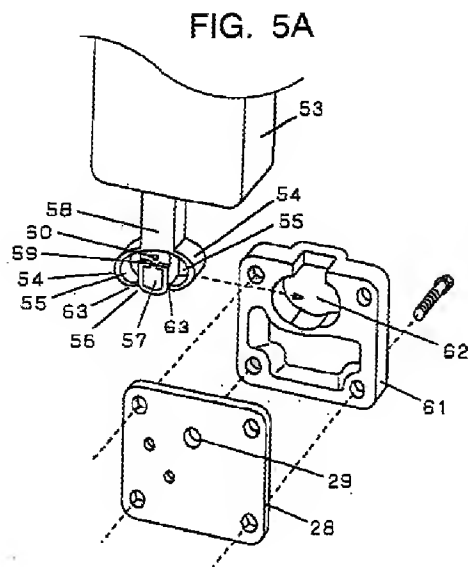
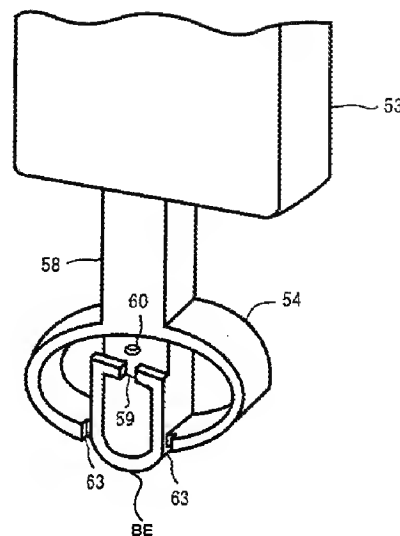


FIG. 5B



With particular reference to Figures 5A-5B shown immediately above, Kubota discloses a refrigerant compressor similar to that of Svendsen, and which functions to provide the same results (i.e. refrigerant compression). To begin, the Examiner notes that United States Patent Publication No. 2004/0052653 is the published U.S. version of the same document, and will therefore be used for citing paragraphs and line numbers. With that in mind, the Kubota reference utilizes a suction muffler 53 with a connection pipe 58 and resonance chamber 55. The muffler 53 is attached to a cylinder head 61 via rounded flanges 54 and a corresponding rounded receiving portion 62. Hence, it is apparent that both Kubota and Svendsen are directed at providing the same type of device (i.e. a sealing structure for a suction muffler), and do so in very similar manners. Most importantly, however, is Kubota's specific use of an oil hole 63 disposed at the bottom of the suction muffler connection pipe 58, and above the bottom edge (BE) of the sealing portion. Hence, any oil leaking from holes 63 will drip onto the bottom edge (BE) of the sealing portion that is fit into receiving groove 62. Utilizing an oil hole like

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that of Kubota with the suction muffler Svendsen would produce Applicant's claimed invention. Therefore, to one of ordinary skill desiring a well-sealed suction muffler, it would have been obvious to utilize the techniques disclosed in Kubota et al. in combination with those seen in Svendsen et al. in order to obtain such a result.

Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the connection pipe 29 of Svendsen with the oil drip hole 63 of Kubota in order to obtain predictable results; those results being a better sealing function at the muffler-to-cylinder-head interface.

6. In regards to dependent **Claim 6**, it can be seen best in Figure 4 of Svendsen that the resonance chamber (RC) has a nearly semi-circular shape extended to the discharge chamber (DC). Regarding dependent **Claim 7**, and again referencing Figure 4, Svendsen discloses a ring-like seat, or pipe 29, designed to be disposed along the inner wall of the nearly-semi-circular resonance chamber (RC) of the cylinder head. Therefore, to one of ordinary skill desiring a better sealing function, it would have been obvious to utilize the techniques disclosed in Kubota in combination with those seen in Svendsen in order to obtain such a result.

7. **Claims 8 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,402,484 to Svendsen et al in view of United States Patent Application Publication No. 2004/0052653 to Kubota et al. as applied to Claims 1 and 6-7 above, and further in view of United States Patent No. 4,759,693 to Outzen.

In regards to dependent **Claims 8 & 10**, Outzen discloses the use of appropriately selected resonance frequencies when and if less noise is desired. In particular, Outzen discloses a suction sound damper designed to eliminate resonance oscillations altogether by stating "It is particularly favorable for the shells to be substantially rectangular...Such a suction sound damper can be accommodated in the capsule to save space and has an extraordinary strength which ensures that resonance oscillations of the housing do not occur at all or lie above the hearing threshold"

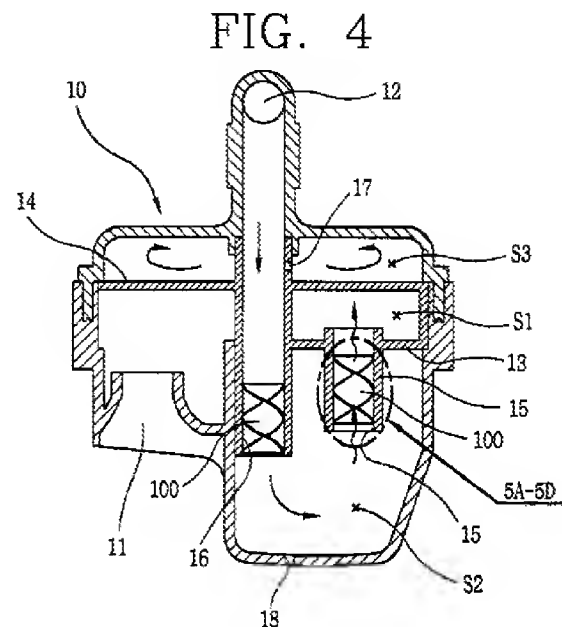
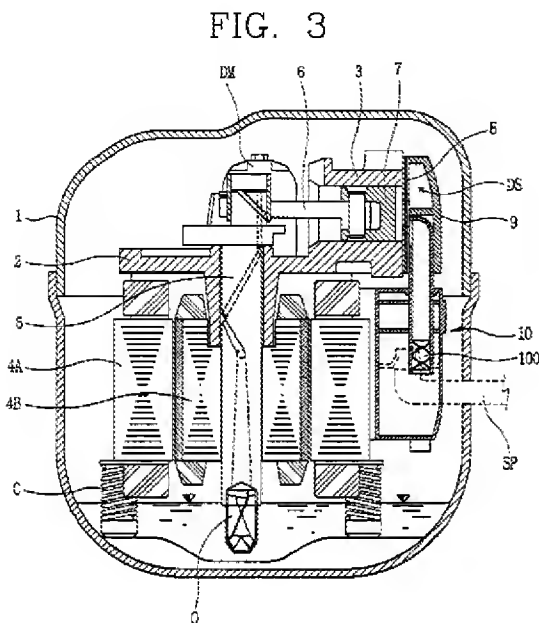
(Column 2, Lines 67-68; Column 3, Lines 1-6) One of skill in the art of compressor could have easily applied the resonance frequency techniques taught by Outzen to various other compressors (i.e. Svendsen) in order to obtain the same noise dampening results. Therefore, to one of ordinary skill desiring a quieter compressor, it would have been obvious to utilize the techniques disclosed in Outzen in combination with those seen in Svendsen in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the resonance frequencies of Svendsen using the concepts taught by Outzen in order to obtain predictable results; those results being a much quieter compressor.

8. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,402,484 to Svendsen et al in view of United States Patent Application Publication No. 2004/0052653 to Kubota et al. as applied to Claims 1 and 6-7 above, and further in view of United States Patent No. 5,487,648 to Alfano et al.

Svendsen fails to disclose that the resonance frequency of a plane portion of the hermetic container and the resonance frequency of the opening of the suction muffler are independent of each other. However, Alfano et al. specifically discloses the particular method of designing the container to have a resonance frequency different than that of motor compressor itself. In particular, Alfano states, "In the hermetic motor compressors for home refrigerators, beside the efficiency, a very important issue is the noise produced by the motor compressor and transmitted outside by the shell. It is known that for reducing the noise it is necessary to shape the shell in such a way that its resonance frequency is different from the frequency of the motor compressor." (Column 1, Lines 23-29) Therefore, since the suction muffler together with the motor may form the "motor compressor", Alfano et al. makes it obvious to vary the frequencies of the hermetic container and the suction muffler. Therefore, to one of ordinary skill desiring a quieter compressor unit, it would have been obvious to utilize the techniques disclosed in Alfano in combination with those seen in Svendsen in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the compressor structure of Svendsen with the differing resonant frequencies of Alfano et al. in order to obtain predictable results; those results being a much quieter compressor that eliminates much of the audible annoyances associated with comparable compressors.

9. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,402,484 to Svendsen et al in view of United States Patent

Application Publication No. 2004/0052653 to Kubota et al. as applied to Claims 1 and 6-7 above, and further in view of United States Patent No. 6,415,888 to An et al.



With reference to Figures 3-4 shown immediately above, An et al. (An) discloses a rotary refrigerant compressor for use in refrigerant systems (i.e. air conditioning). Like both Svendsen and Kubota, An utilizes a suction muffler device 10 for attenuating the noise associated with refrigerant compressors (See Abstract). Most importantly, however, is An's use of an oil hole 18 disposed on the bottom of the body of the suction muffler (See Fig. 4). In particular, An states "In FIGS. 3 and 4, the reference numeral or character 4A denotes a stator, 18 an oil discharge port, C a support spring, and O an oil feeder. In addition, the reference numerals 13 and 14 denote partition walls, respectively." (Col. 5, Lines 43-46). It is apparent that the suction muffler of An is utilized in the same type of compressors as those seen in Svendsen and Kubota. Moreover, all three references are aimed at providing quieter refrigerant compressors.

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Hence, one of ordinary skill in the art of refrigerant compressors could have easily utilized the oil hole placement of either Kubota (i.e. on the connection pipe) or An (i.e. on the suction muffler body) depending on the desired oil drainage path in order to provide proper oil drainage from the muffler. Therefore, to one of ordinary skill desiring a more tightly sealed muffler, it would have been obvious to utilize the techniques disclosed in An in combination with those seen in the Svendsen-Kubota combination in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the oil hole placement of An with the Svendsen-Kubota muffler in order to obtain predictable results; those results being an oil drain path that efficiently lubricates the muffler seal interface.

Response to Arguments

10. Applicant's arguments with respect to claims 1 and 6-11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER B. COMLEY whose telephone number is (571)270-3772. The examiner can normally be reached on M-F 7:30am - 5:00am EST (Alternate Fridays Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon C. Kramer can be reached on (571)-272-7118. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander B Comley/
Examiner, Art Unit 3746

/Charles G Freay/
Primary Examiner, Art Unit 3746

ABC